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Montana
Natural Resource Information System
and
Natural Heritage Program

First Annual Report

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MONTANA NATURAL RESOURCE INFORMATION SYSTEM
AND
MONTANA NATURAL HERITAGE PROGRAM

FIRST ANNUAL REPORT

Submitted to
The Montana State Legislature
and
The Office of the Governor

by

The Montana Natural Resources Data System
Advisory Committee
Helena, Montana
December, 1986

SUMMARY

Montana Natural Resource Information System

The Montana Natural Resource Information System (NRIS) was established by the Montana Legislature as a "comprehensive program for the acquisition, storage, and retrieval of existing data relating to the natural resources of Montana" (MCA 90-15-101 et seq.). This system promotes the sharing of information among agencies at all levels: local, state, federal and private. NRIS provides a means of making information on Montana's natural resources quickly and readily accessible to persons needing it.

NRIS is responsible for developing uniform, easily accessible, state-wide indexes and data bases for each of Montana's natural resources. Assistance is provided to agencies in designing systems to manage their natural resource information. Users are further assisted by the development of a referral service to allow immediate access to the best sources of information. This system allows government and private users to readily identify the location, source, and types of information available in other agency files or published and unpublished literature. Montana's NRIS program is being emulated by other western states, including Idaho and Oregon. Major activities of NRIS during its first year of operation include:

1. Administration of the Montana Natural Heritage Program;
2. Completion of a user needs assessment;
3. Development of an index to sources of existing information on Montana's natural resources (published and unpublished);
4. Development of a Water Resources Data Management System;
5. Coordination of geographic information system (GIS) development within state government;
6. Management of the Montana Rivers Study database;
7. Inventory of unpublished data sources within state agencies;
8. Cooperation with the Clark Fork River Basin project in gathering data sources within the Basin;
9. Fostering cooperation and data sharing among state, federal, and local government agencies;
10. Coordination with similar programs in other states;
11. Publication of eight reports and articles;
12. Initiation of efforts to gain on-line access to existing computer databases through one central contact point;
13. Inventory of automated data holdings within state government; and
14. Promotional and outreach activities, including fourteen presentations or appearances before various user groups.

Montana Natural Heritage Program

The Montana Natural Heritage Program (NHP) provides a comprehensive inventory of significant elements of the state's natural features that are exemplary, rare, or unique. These elements include plant and animal

species, plant communities, aquatic systems, critical habitats and other ecological features of significance, and geological features.

The inventory data are compiled from detailed review of published and unpublished sources, as well as from agencies, organizations, the scientific community, and individuals. This is followed by a continual update and refinement of the information, including field survey. Data are obtained on the occurrences, number, condition, endangerment, location, and land ownership status of significant elements. The data are stored in an integrated data management system. Map files, manual files, and computer files keep the information well organized and readily accessible.

Heritage methodology and goals assure that data are unbiased, comprehensive, and accurate. This provides a non-confrontational approach to conflict resolution for natural resource issues. This system of information acquisition, storage, and retrieval provides comprehensive and accurate data for wise resource management and development. The resulting data base is particularly useful when a defined geographic area must be studied for preparing environmental impact statements, planning for facility siting, or to consider reclamation issues.

Montana's Natural Heritage Program has been the model heritage program in the western United States. Major activities of the NHP during its first year of operation include:

1. Development of rare plant and animal lists for Montana;
2. Development of database on specific occurrences of plants, animals and communities;
3. Development of abstracts summarizing existing information on Montana's animal species;
4. Development of abstracts of key sources of information on Montana plants and animals;
5. Development of abstracts summarizing existing information on specially managed areas;
6. Cooperation with state and county agencies; and
7. Establishment of an agreement with the U.S. Fish and Wildlife Service for the study of Montana plants.

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INTRODUCTION

Montana's wealth of natural resources forms the basis for its present and future economic, social and cultural development. Agriculture, wood products, mining, and tourism and wildlife-oriented recreation are the most important industries in the state; the state's economy is clearly tied to the state's ability to manage and use these resources wisely.

In order to best manage these natural resources so that they continue to provide a long-term economic base for Montana, decision makers need access to detailed information on the status of these resources--information on their supply, availability, geographic distribution, use, upward or downward trend, and value to the citizens of Montana. As a consequence, considerable amounts of money are spent each year by state, local, and federal agencies, industry, and business in gathering the necessary data.

In spite of the money spent gathering natural resources data, little coordinated effort had been made prior to 1985 to manage or organize these data (beyond the efforts of individual agencies). At the same time, the amount of new information has been increasing and continues to increase at an ever-expanding rate. The result is that (1) The compilation of data for a new study area is very inefficient, (2) data from previous studies are not used to the fullest extent, and (3) much duplication of effort occurs.

Purpose, Objectives, and Authority

To meet this need for data management in Montana, the 1983 Montana Legislature created the Montana Natural Resource Information System and the Montana Natural Heritage Program. The programs were funded by the 1985 Legislature, and began operation in late 1985. (See Appendix A, 90-15-101 et seq.; also see Appendix B for the legislative history of the programs.)

The primary goal of both programs is to reduce costs of natural resource data gathering by making existing data sources more accessible and by improving management of existing data. This will not only reduce long-term data gathering costs but will ensure that the best available information is quickly at hand for critical resource decisions. The Natural Resource Information System is achieving this goal by providing an inventory of existing data and by developing a system to provide rapid access to natural resource data. The Natural Heritage Program is achieving this goal by developing a thorough inventory of plants, animals, geological features, and specially managed areas of special concern for use in management and project planning.

The programs are housed in the Montana State Library under the authority of the Montana State Library Commission. The State Library was chosen to administer both programs because (1) the State Library can remain strictly neutral and unbiased on controversial natural resource issues, and (2) the State Library has an ongoing information dissemination function.

The Montana Natural Resources Data System Advisory Committee

Direction for both programs is provided by the Montana Natural Resources Data System Advisory Committee. This committee was established by the Montana Legislature (see 2-15-1514 and 90-15-201, MCA) to design, implement, and monitor progress of the programs.

State law defines the makeup of the Committee to include employees of: the Environmental Quality Council; the Montana State Library; the Montana University System; the Department of Natural Resources and Conservation; the Department of Fish, Wildlife, and Parks; the Department of State Lands; the Department of Health and Environmental Sciences; the Department of Agriculture; the Department of Highways; and the State Historical Society. Principal federal data source agencies have been asked to appoint ad hoc delegates to the Committee. Membership of the Committee at the time of this report is listed in Appendix C. The Committee has met three times in 1983, six times in 1984, five times in 1985, and eight times in 1986.

CONCEPTUAL DESIGN

In formulating the conceptual design for the programs, the Montana Natural Resources Data Management System Advisory Committee considered three basic approaches.

1. Centralized data base approach. This would involve centralization of all natural resources data management into one centralized computer system within a central agency.
2. Linked network approach. This would consist of many individual data bases in many agencies linked together by a communication network and management structure. Although the individual centers would differ from each other because of their individual agency needs, all would be compatible and mutually accessible.
3. Hierarchical approach. This approach would establish a hierarchy of contact points where a user's request would be satisfied or forwarded "up" or "down" the hierarchy for further action.

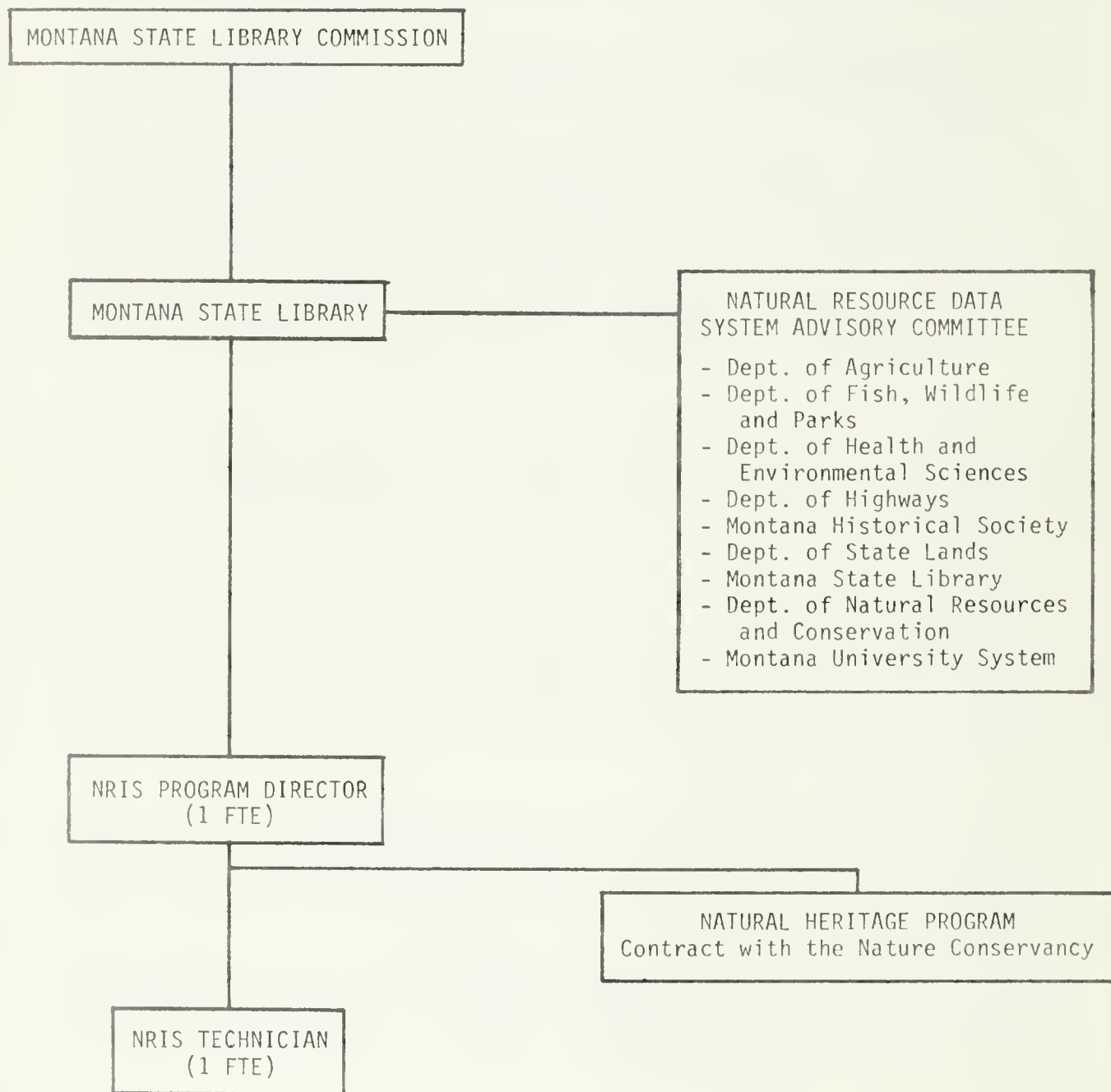
The Committee rejected the first alternative, a single centralized data base, because of its high cost, because of the recommendation of the Governor's Council on Management (1982), and because of the concern by state agencies that they would lose control of their own data management.

The alternative that has been adopted by the Committee is actually a combination of the linked network approach and the hierarchical approach. All participating agencies make up the linked network and NRIS provides a coordinating point of contact and gives the approach its hierarchy. This is the approach that has been adopted by the very successful Texas Natural Resource Information System (considered by many to be the "model" system in the United States), and by the U.S. Geological Survey's National Water Data Exchange (NAWDEx).

This approach is highly user-oriented, enabling all participating agencies to continue to manage their own data and allowing for maximum sharing of data among agencies. Requests can be handled at two levels: through NRIS as a central clearinghouse for natural resource information, or through the agencies maintaining the actual data files.

The organizational structure of NRIS/Heritage is shown in Figure 1. NRIS is a branch of state government housed in the State Library, while the Heritage Program is implemented through a contract with the Nature Conservancy administered by NRIS.

Figure 1. Organizational Structure of NRIS/Heritage



PROGRESS TO DATE

Montana Natural Resource Information System

NRIS began operation in December, 1985. In its first year of operation, much has been accomplished toward achieving the program's goals and objectives. The program is being used as a model for development of similar systems in Idaho and Oregon. Since then major activities have included:

1. Administration of Montana Natural Heritage Program

NRIS administers the contract with the Nature Conservancy for the Montana Natural Heritage Program (see following section).

2. User Needs Assessment

In April of 1986, NRIS conducted a mail survey of natural resource data users to determine user needs for natural resource information and data management. Questionnaires were mailed to 481 persons and groups representing a variety of known or potential natural resource data users (including government, business, industry, academia, and public interest groups). Two-thirds of these questionnaires were completed and returned.

Respondents indicated the most serious problem is that people are unaware of previous studies and of existing sources of data. Forty-one percent of the respondents indicated this was a serious problem and forty-four percent indicated it was a moderate problem. Approximately fifty-eight percent of the respondents considered the development of an automated geographical and subject area indexing system for existing data sources to be the highest priority toward the solution of this problem.

The survey results clearly showed there is a need and much interest by potential users for a centralized system for providing access to natural resource information, particularly water resources data.

3. Indexing of Existing Sources of Natural Resources Information

A first step in meeting the program's goals and answering the needs identified by the User Needs Assessment has been the development of a standardized indexing system. Sources indexed include (a) published and unpublished documents; (b) published and unpublished maps; (c) environmental assessments; (d) bibliographies; (e) aerial imagery; (f) automated and digital data files; (g) special collections of literature on a certain topic; and (h) unpublished data files. Information sources are indexed both by subject area and geographic area of coverage.

This system allows users to quickly obtain references to existing sources of information for any specified subject area and geographical location. Output may be a printout, a machine-readable data base, or a word processing document on diskette in standard format, at the user's option.

Several innovative approaches have been taken in developing this indexing system. First, it has been developed using microcomputers rather than mainframe computers. Previous indexing systems in Montana and other states have been difficult to maintain because of the costs and complexity of mainframe programming, and have received little use because few people have mainframe computers. In keeping with the findings of the User Needs Assessment, the NRIS system is being developed for IBM-compatible microcomputers (the most commonly-used computer) using dBase III plus (the most commonly-used data base management program). Users will be able to access the system through printouts, on diskettes, or on-line through a modem. The system will be continuously updated and will never be out of date. Also unlike most previous systems, the system will include unpublished sources such as computer files, manual data files, and one-of-a-kind maps, together with information on where the source can be found.

The system created by NRIS has been adopted by the Department of Natural Resources and Conservation for its energy and water resources collections, by the Department of Fish, Wildlife and Parks for its fisheries and wildlife collection, and by the Department of Agriculture. To date over 4,000 information sources have been entered into the system. Work is underway to include special collections of information on weeds and pesticides, and water, reclamation, mining, and minerals (housed at the Department of State Lands, the Water Center, and the Bureau of Mines and Geology) in the system. Eventually, a comprehensive and user-friendly information indexing system will be available to all Montana users.

In cooperation with Montana State University, NRIS can generate maps showing the extent of coverage of the state by different kinds of studies. For example, Figure 2 shows the number of state or federal environmental impact assessments that have been completed for different portions of the state. This figure shows that there have been at least 24 assessments done for every part of the state; that the northcentral and northwestern portions of the state have had the fewest studies; and that 86 different assessments have included the Colstrip area. By indexing these existing data sources, NRIS will help resource people working on future environmental assessments to gain access to data from previous studies. Many such assessments are completed in Montana each year, and this should result in reduced duplication of effort and reduced costs of data gathering.

4. Montana Water Resources Data Management System

In 1985, the Montana Legislature passed House Bill 680, which requires the Department of Natural Resources and Conservation (DNRC) to, "in cooperation with other state agencies, institutions, colleges, and universities, establish and maintain a centralized and efficient water resources data management system sufficient to make available and readily accessible, in a useable format, to state agencies and other interested persons, information on the state's water resources that affect the state, existing and potential uses, and existing and potential demand."

In cooperation with DNRC, NRIS has taken the lead role in developing this water resources system. A steering committee, consisting of dele-

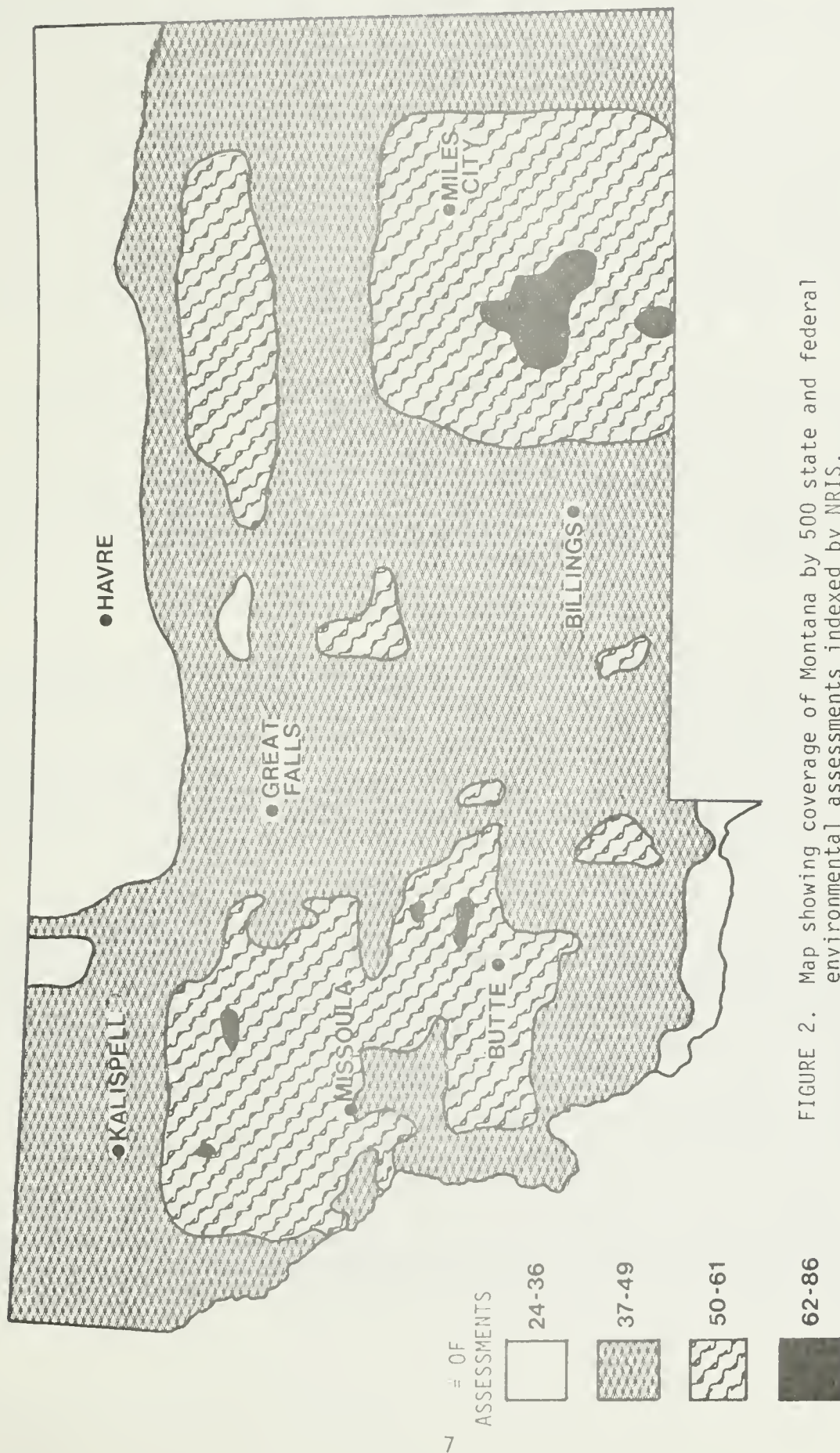


FIGURE 2. Map showing coverage of Montana by 500 state and federal environmental assessments indexed by NRIS.

gates from the Department of State Lands, Health and Environmental Sciences, the Governor's Office, Bureau of Mines and Geology, Fish, Wildlife and Parks, the U.S. Geological Survey, and the Water Resources Center, has been assembled to direct this effort (Appendix D). Subcommittees are investigating questions of particular concern, such as data quality control, specific user needs, and methods of compiling the existing data. The system will provide centralized access to existing decentralized data bases, which will continue to be maintained in their home agencies, as well as user assistance in obtaining and interpreting water resources data.

Accomplishments to date include:

- (a) A standardized coding system for hydrologic units and subject area analysis has been implemented;
- (b) An inventory of existing sources of water resources data, including cataloging of collections of unpublished material as well as unpublished data bases, has begun;
- (c) A Montana Water Data User's Conference was jointly sponsored by NRIS and the U.S. Geological Survey to better determine user needs for water resources data; (the findings have been published in a proceedings);
- (d) Interviews with principal data users to determine specific needs have begun;
- (e) The National Water Data Exchange (NAWDEx) file structure has been successfully converted to a form accessible on micro-computers using dBase III;
- (f) The program has improved communication among those agencies responsible for water resources. The Subcommittee has met six times in 1986.

5. Geographic Information System Development

In response to a need expressed by many state and federal agencies, NRIS has begun coordination of Geographic Information System development within state government. A working group has been assembled to discuss needs, applications, and system design. Two meetings were held in 1986, and presentations and/or demonstrations were presented by Kathie Jewell of the Bureau of Land Management, Gary Waltenbaugh of the Oregon Department of Energy, Patricia Roberts of the Montana Census and Economic Information Center, and Jerry Nielsen of Montana State University.

6. Management of the Montana Rivers Study Data Base

Under contract with the Department of Fish, Wildlife and Parks, NRIS has developed a computer data base of information on natural resource values of Montana rivers, including fisheries, wildlife, recreation, cultural features, botanical features, geological features, and specially

managed areas. NRIS will continue to manage this data base. Work is under way to provide on-line access to the data base and to tie the information to the Environmental Protection Agency's river reach files and Bonneville Power Administration's hydropower resource database.

7. Inventory of Unpublished Original Data Sources

NRIS has begun an inventory of existing, unpublished, original data sources within natural resource agencies. Sources will be indexed using the NRIS system. As a pilot project, NRIS has entered into a cooperative agreement with Yellowstone County to inventory and index natural resource data holdings in Yellowstone County. All offices of natural resource agencies in Billings have been contacted, and significant unpublished data sources have been entered into the NRIS system.

8. The Clark Fork River Basin Project

NRIS and the Governor's Office Clark Fork River Basin Project have agreed to cooperate in building a comprehensive, integrated natural resource data base for the river basin. This work will include using the NRIS indexing system to catalog existing data sources, and working toward the development of a geographic information system for the basin in cooperation with the U.S. Geological Survey. A memorandum of understanding to carry out this project is being negotiated.

9. Interagency Cooperation

NRIS and Heritage have accomplished much toward fostering cooperation among governmental agencies at the state, federal, and local level. Federal agencies have appointed ad hoc delegates to the Advisory Committee (Appendix C), and cooperative agreements have been signed with the Department of Fish, Wildlife and Parks, the Department of Natural Resources and Conservation, the Department of Agriculture, the U.S. Forest Service, the Bureau of Land Management, the Department of State Lands, the Environmental Protection Agency, and Yellowstone County.

10. Survey of Other States' Systems

NRIS has contacted similar programs in other states to learn from their experiences. In particular, similar programs in Idaho, Oregon, Washington, Wyoming, Texas, Nebraska, New Mexico, and Utah have provided much advice and many valuable suggestions.

11. Publications and Reports

Appendix E lists the publications and reports produced by NRIS/NHP during their first year of operation.

12. Progress in linking with other computer systems

Efforts are under way to gain on-line access to the following systems: the Environmental Protection Agency's river reach files and water quality data base (STORET); the Bonneville Power Administration's

Hydrosite and Geographic Information System files; the Soil Conservation Service's snowpack data base (SNOWTEL); and the U.S. Geological Survey's surface water data base (WATSTORE), water sampling site data base (NAWDEx) and index of aerial photography and satellite imagery.

13. Inventory of Automated Natural Resource Data Holdings

Work is under way to enter the results of the Department of Administration's 1983 survey of state agency data files in to the NRIS system and to bring the inventory up to date.

14. Publicity and promotional activities

Efforts during the first year have focused on system design and creating the organizational structure for building the system, and publicity and promotion have not been a high priority. Nevertheless, several promotional activities were conducted during the year (see Appendix F).

Montana Natural Heritage Program

The Natural Heritage Program began operation in October, 1985. The program is operated under contract with The Nature Conservancy. Four staff (coordinator/zoologist, botanist, ecologist, data technician) were hired and trained in methodology used by 43 other state natural heritage programs. Manual and map files were set up and the computer software and data bases were acquired and brought on-line.

Progress in all areas is well ahead of schedule. Data requests come from all levels of government, industry, citizens groups, academia, and individuals. The program has become the model heritage program for the West.

Some of the major activities of the Natural Heritage Program include:

1. Development of Rare Plant and Animal Lists for Montana

Staff scientists compiled existing sources of literature and contacted numerous individuals to develop plant and animal lists and a community classification. Each species was ranked on its statewide and global abundance, distribution, and ecological fragility. This provides a complete listing of the species and communities that are rare, unique or of special concern in Montana and their status in adjacent states.

2. Development of Element Occurrence Database

Locational records of "elements" (rare or exemplary plants, animals and communities) have been compiled and computerized throughout Montana. Over 650 element occurrences form this growing data base on the state's most biologically significant areas (see Attachment E for two examples). Already this data base has provided valuable information to several state, and federal agencies and private business and industry.

3. Development of Vertebrate Characterization Abstracts

The Vertebrate Characterization Abstract (VCA) database is a computerized summary of various attributes of each vertebrate species -- taxonomy, phenology, distribution, habitat, ecology, and references. This database is particularly valuable for use in planning or management over a larger area or habitat type. Information is provided on the global and state status for all attributes on over 600 vertebrate species in Montana. The ease of access and broad application make the VCA database a powerful tool in resource management. The VCA data base is capable of meeting many of the needs of resource managers without the necessity of independent invention, burdensome development cost, large computer investments, or long delays in availability.

4. Development of Source Abstract Files

Information support for all data bases relies heavily upon well documented and readily accessible bibliographic sources. Over 1,500 titles, reports, field surveys and other sources have been abstracted, characterized to content and accessioned to the source abstract database.

5. Development of Managed Area Abstracts

This computerized file contains summary information on location, size, ownership, management, and history of all major publicly administered lands in Montana.

6. Cooperation with Federal Agencies

The Natural Heritage Program has coordinated and developed the sensitive plant and animal species lists for the Forest Service. These will be used region-wide in their management for rare and sensitive species.

Complete review of weed environmental impact statement proposals was performed for the Forest Service on National Forests. The Heritage Program botanist contributed in the Forest Service and Bureau of Land Management workshop on weed control.

Status surveys were conducted on listed and candidate endangered species in Montana for the U.S. Fish and Wildlife Service. Two status reports on plants were completed while surveys and monitoring continues on several rare animals.

A biological review on sixteen mine sites was completed for the U.S. Environmental Protection Agency (EPA). This was part of a national survey for the Office of Solid Waste, Mining Division. EPA requested information on rare plants and animals within the sphere of influence of abandoned mines. Emphasis was on rare, endangered, sensitive or unique plant and animal species and plant communities. Also, EPA requested the global and state rank for each species to enable them to assess the relative importance of each species throughout the United States. This information is being used for planning and implementing mine reclamation

and hazardous waste cleanup programs. The Natural Heritage Program also compiled a preliminary list of critical wetlands in Montana for the EPA's Critical Wetland Inventory.

7. Establishment of a Limited Authority Agreement for Study of Montana Plants

The Natural Heritage Program has successfully established a Limited Authority Agreement for study of rare plants in Montana with the U.S. Fish and Wildlife Service under Section 6 of the Endangered Species Act. This will allow the Natural Heritage Program, through the State Library, to obtain federal funds for rare plant survey. Previous surveys performed under contract with the U.S. Fish and Wildlife Service have revealed that two species are more common than previously thought. This resulted in recommendation from the NHP staff that neither be listed as threatened or endangered.

FINAL PROJECT RESULTS AND USE

The final products of the NRIS and NHP programs will be:

1. A comprehensive system for managing natural resource information in the state, including ability to quickly locate existing information sources by subject area and geographic area of coverage;
2. A central contact point for natural resource information requests, including a referral service;
3. A comprehensive data base on rare, unique and exemplary biological and other natural features in the state.

Together, NRIS and NHP have responded to nearly 200 data requests since their inception. Use of the programs will increase greatly as the data bases and indexing systems mature and as program marketing and promotion begin.

Figure 3 summarizes the volume of information requests responded to by the two programs during their first year of operation. Although the programs are still under development, the volume of requests processed compares favorably with that of similar programs in other states.

The products have been be used by:

1. Federal agencies (for planning, management, preparing impact statements and resource inventories).

EXAMPLE: EPA has used the Heritage data base for a detailed study of reclamation and recovery of abandoned and active mine sites in Montana.

2. State Agencies (for planning, management, preparing impact statements, and resource inventories).

EXAMPLE: The Department of State Lands' Abandoned Mines Bureau requested information on locations of certain types of sites from NRIS and the NHP. A list of fifty-two sites was provided.

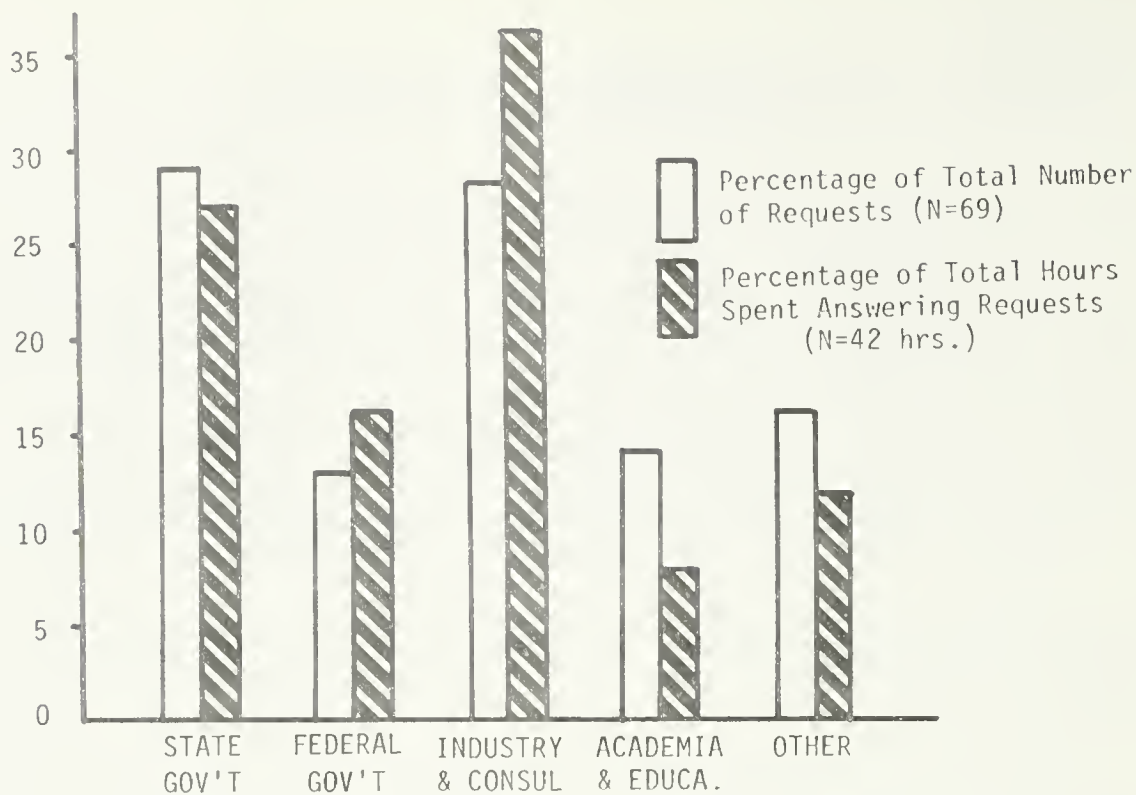
3. Local Governments (for planning, management, impact statements, and resource inventories).

EXAMPLE: Yellowstone County is cooperating with NRIS to compile existing sources of resource data within Yellowstone County for use in preparing the County's Comprehensive Plan.

4. Industry (for planning, preparing permit applications).

EXAMPLE: Montana Power Company has used the programs to gather resource information to be used in preparing the permit

A. NRIS



B. HERITAGE

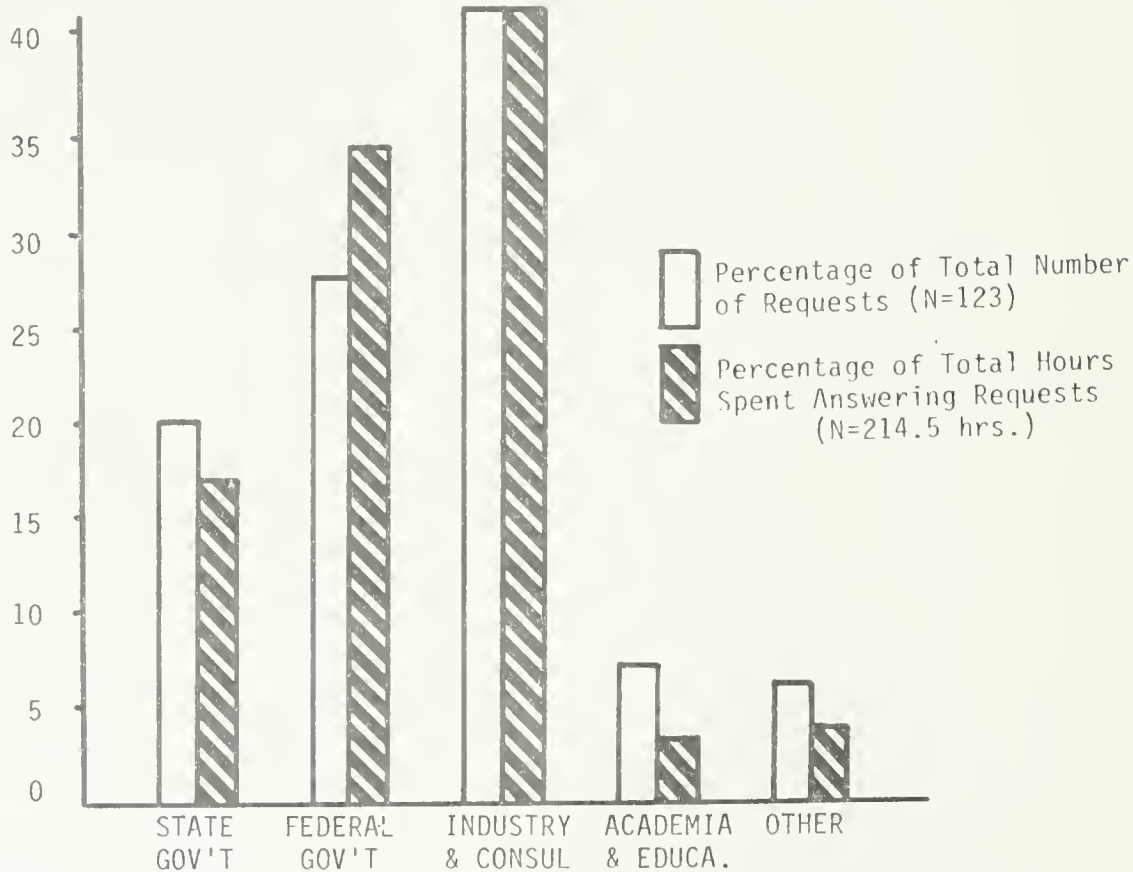


Figure 2. Summary of information requests processed by (A) The Natural Resource Information System, and (B) the Montana Natural Heritage Program during their first year of operation (not including projects done under contract).

applications for the Roundup-Ivanhoe and Laurel-Bridger 100 kV transmission line projects.

5. Consultants (for gathering data for clients in the public and private sector).

EXAMPLE: Private consultants have used both programs extensively for a variety of projects..

6. Teachers and Educators (for preparing lectures, workshops, teaching resources).

EXAMPLE: Teachers have used the element ranking lists and the vertebrate characterization abstracts for a variety of teaching purposes.

7. Private Citizens and public interest groups.

EXAMPLE: A Montana public interest group used the programs extensively in preparing a proposed model for the Centennial Valley Ecosystem.

8. Researchers.

EXAMPLE: Researchers within Montana's University System have used the programs to prepare a list of regional endemic species for preparing a National Science Foundation grant application.

9. Utilities and Power Planning groups.

EXAMPLE: Bonneville Power Administration and the Northwest Power Planning Council are using the Rivers Study data base in hydropower resource planning.

RECOMMENDED PRIORITIES FOR 1987

The Committee recommends that the following projects be continued and, where possible within the constraints of the program budgets, completed.

The Montana Natural Resource Information System

1. Continue to administer the Montana Natural Heritage Program;
2. Expand the index to sources of existing information on Montana's natural resources (published and unpublished);
3. Continue to cooperate with DNRC in developing a Water Resources Data Management System;
4. Coordinate and promote geographic information system (GIS) development within state government;
5. Continue to manage and expand the Montana Rivers Study database;
6. Complete and update the inventory of unpublished data sources within state agencies;
7. Continue to cooperate with the Clark Fork River Basin project in gathering data sources within the Basin;
8. Continue to promote cooperation and data sharing among state, federal, and local government agencies;
9. Continue to coordinate with similar programs in other states;
10. Gain on-line access to existing computer databases through one central contact point;
11. Complete the inventory of automated data holdings within state government; and
12. Continue promotional and outreach activities, including presentations or appearances before various user groups.

The Montana Natural Heritage Program

1. Refine and update the rare plant and animal lists for Montana;
2. Continue to add records to the database on specific occurrences of plants, animals and communities;
3. Refine and update abstracts summarizing existing information on Montana's animal species;
4. Continue to add abstracts of key sources of information on Montana plants and animals;
5. Continue to add abstracts summarizing existing information on specially managed areas;
6. Continue to cooperate with federal, state and county agencies; and
7. Continue to work with the U.S. Fish and Wildlife Service in gathering data on rare Montana plants.

In addition, the programs should continue to identify and contact agencies and groups that could be significant users or contributors to the programs.

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APPENDICES

CHAPTERS 12 THROUGH 14

RESERVED

CHAPTER 15

NATURAL RESOURCE INFORMATION SYSTEM

Part 1 — General

Section

90-15-101. Purpose.

90-15-102. Definitions.

90-15-103. Funding — appropriation.

Part 2 — Advisory Committee

90-15-201. Duties of committee.

90-15-202. Committee staff.

90-15-203. Expenses of committee members — meetings.

Part 3 — Information System

90-15-301. Establishment of information system.

90-15-302. Natural heritage program.

90-15-303. Interagency cooperation.

90-15-304. Availability of information.

Part 1

General

90-15-101. Purpose. It is the purpose of this chapter to establish a planning framework for the development of a natural resource information system, to implement the system, and to establish an ongoing Montana natural heritage program.

History: En. Sec. 1, Ch. 650, L. 1983; amd. Sec. 2, Ch. 395, L. 1985.

Compiler's Comments

1985 Amendment: Near middle after "information system", inserted "to implement the system".

90-15-102. Definitions. As used in this chapter, the following definitions apply:

- (1) "Committee" means the natural resource data system advisory committee created by 2-15-1514.
- (2) "Library" means the state library provided for in 22-1-201.
- (3) "Natural heritage program" means a program of information acquisition, storage, and retrieval relating to the flora, fauna, and biological community types of Montana.

(4) "Principal data source agencies" means any of the following state agencies: the department of natural resources and conservation; the department of fish, wildlife, and parks; the department of state lands; the department of health and environmental sciences; the department of agriculture; the department of highways; the state historical society; and the Montana university system.

History: En. Sec. 2, Ch. 650, L. 1983; amd. Sec. 3, Ch. 395, L. 1985.

Compiler's Comments

1985 Amendment: Substituted definition of "Library" for "'Department" means the department of administration created by 2-15-1001."

90-15-103. Funding — appropriation. The library and each principal data source agency may apply for and may receive funding from private and public sources for the purposes of this chapter, and any such funds are statutorily appropriated to the library or to the appropriate principal data source agency for such purposes as provided in 17-7-502.

History: En. Sec. 9, Ch. 650, L. 1983; amd. Sec. 4, Ch. 395, L. 1985.

Compiler's Comments

1985 Amendment: At beginning substituted "The library and each principal data source agency" for "The department of administration"; and near end substituted "are statutorily

appropriated to the library or to the appropriate principal data source agency for such purposes as provided in 17-7-502" for "are appropriated to the department for such purposes".

Part 2

Advisory Committee

Part Cross-References

Natural Resource Data System Advisory Committee, 2-15-1514.

90-15-201. Duties of committee. The committee shall examine the following matters and make recommendations to the library concerning:

- (1) criteria for the categories and types of data to be collected for a natural resource information system;
- (2) criteria for the format of data collection;
- (3) identification of existing sources of relevant data in the public sector;
- (4) identification of data acquisition, storage, and retrieval methodologies that are economical and efficient, that minimize or eliminate the duplication of data bases, and that utilize computer networking;
- (5) probable costs, to agencies furnishing required data and probable costs of managing the data;
- (6) probable benefits to be realized by the establishment of a natural resource information system;
- (7) operation of the Montana natural heritage program; and
- (8) other items the committee considers of importance to the establishment of a natural resource information system.

History: En. Sec. 3, Ch. 650, L. 1983; amd. Sec. 5, Ch. 395, L. 1985.

Compiler's Comments

1985 Amendment: Near end of lead-in clause, substituted "library" for "department head".

90-15-202. Committee staff. The library shall provide staff support to the committee, within the limits of the library's available resources.

History: En. Sec. 3, Ch. 650, L. 1983; amd. Sec. 6, Ch. 395, L. 1985.

Compiler's Comments

1985 Amendment: At beginning substituted "library" for "department" and at end substituted "library's" for "department's".

90-15-203. Expenses of committee members — meetings. (1) Committee members, while engaged in committee business, are entitled to be reimbursed for travel expenses as provided for in 2-18-501 through 2-18-503. These expenses shall be borne by the agency employing the member. Each member serves at the pleasure of the respective appointing authority.

(2) The committee shall establish its own format for the conduct of meetings.

History: En. Sec. 3, Ch. 650, L. 1983.

Part 3

Information System

90-15-301. Establishment of information system. (1) The library, in consultation with the committee, shall establish a planning framework for the implementation of a natural resource information system and shall begin implementation of the plan. This system is to be a comprehensive program for the acquisition, storage, and retrieval of existing data relating to the natural resources of Montana.

(2) The library shall give attention to the factors listed in 90-15-201 and shall prepare any legislation necessary to implement the system.

(3) It is not intended that the system shall require fieldwork to produce data. The system is intended to facilitate the management of data collected by state agencies in the normal course of their operations.

History: En. Sec. 4, Ch. 650, L. 1983; amd. Sec. 7, Ch. 395, L. 1985.

Compiler's Comments

1985 Amendment: In (1) in first sentence, at beginning substituted "library" for "department" and at end inserted "and shall begin implementation of the plan"; in (2) at beginning substituted "library" for "department"; and in

(3) in first sentence, after "fieldwork", deleted "or literature searches".

Cross-References

State information and research system, 90-1-109.

90-15-302. Natural heritage program. (1) There is a Montana natural heritage program to be operated by the library. In order to establish the program, the library may contract with an independent contractor or may employ necessary staff. In order to minimize costs, the library or other state agencies may make available state resources and facilities to an independent contractor as part of a contract for services.

(2) The Montana natural heritage program shall be designed to be compatible with similar programs in other states. This program is to be an initial step in the formulation of the comprehensive natural resource information system referred to in 90-15-301 and is to be considered a part of the system.

History: En. Sec. 5, Ch. 650, L. 1983; amd. Sec. 8, Ch. 395, L. 1985.

Compiler's Comments

1985 Amendment: In (1) at end of first sentence, substituted "library" for "department", and substituted second and third sentences for

"In order to establish the program, the department may contract with an independent contractor for a period not to exceed 2 years".

90-15-303. Interagency cooperation. (1) State agencies shall cooperate with the library and the committee in the planning of the natural resource information system.

(2) Within the limits of available resources, state agencies shall provide data requested by the library for purposes of the Montana natural heritage program. If an agency does not possess requested data or is unable to locate requested data, the agency shall inform the library. It is not necessary for an agency to conduct fieldwork or literature searches to obtain requested data.

History: En. Sec. 6, Ch. 650, L. 1983; amd. Sec. 9, Ch. 395, L. 1985.

Compiler's Comments

1985 Amendment: Throughout section changed references to department of administration to references to the state library.

90-15-304. Availability of information. (1) Except as provided in subsection (3), the library shall make information from the natural resource information system available to local, state, and federal agencies and to the general public.

(2) The library may establish a fee system for information requests in order to cover the costs of providing requested information.

(3) If necessary, the library shall establish procedures to protect confidential information in the possession of state agencies.

History: En. Sec. 7, Ch. 650, L. 1983; amd. Sec. 10, Ch. 395, L. 1985.

Compiler's Comments

1985 Amendment: Throughout section changed references to department of administration to references to the state library.

Cross-References

Right to know, Art. II, sec. 9, Mont. Const.
Public records generally, Title 2, ch. 6, part 1.

APPENDIX B

LEGISLATIVE HISTORY

The need for improved natural resource information management has long been felt within state government. Environmental legislation passed in the mid-1970's, including the Montana Environmental Policy Act, the Montana Major Facility Siting Act, the Strip Mine Act, the Open Cut Act, and the Water Use Act, generated a need for quick access to a wide spectrum of natural resources data for decision-making. It also spurred growth of natural resource data gathering as baseline studies and other studies were made for environmental assessments. Great quantities of data were gathered for specific projects. However, with no systematic way to store or index the data, data gathered by one agency were often unknown to other agencies. Also, much valuable data were archived or lost within a few months or years after the completion of a project.

In 1982, the Montana Governor's Council on Management conducted a review of state government and made recommendations on ways in which efficiency of government could be improved. In October of 1982, the Council presented its final report (Montana Governor's Council on Management 1982). Recommendation Number 14 in that report called for coordination of the sharing of natural resource information among agencies. That recommendation called for the continued development of separate systems but stressed the importance of compatibility. It also stressed the importance of indexing existing sources of data so that existing information can be rapidly retrieved. According to the report, coordination responsibility should be assigned to the administrative assistant for natural resources within the Governor's Office. The report recommended against a large, centralized data base, and instead called for a flexible, decentralized information management system.

In response to these recommendations, state agencies worked with the Governor's office to draft legislation for the 1983 Legislature creating a planning framework for development of a Natural Resource Information System and a Natural Heritage Program. Legislation creating the two programs and establishing a planning framework was introduced and passed during the 1983 session (Ch. 650, L. 1983). The Natural Resource Data System Advisory Committee was established, and administrative authority for the programs was placed in the Department of Administration. However, only \$500 was appropriated by the legislature to fund the effort.

In October of 1983, the Department of Administration convened the first meeting of the Advisory Committee. The Committee met on a monthly basis through late 1984. In late 1983, a preliminary dictionary of computer data bases within state government was prepared by the Department of Administration. At its monthly meetings, the Committee drew up a conceptual design for an integrated Natural Resource Information System and a Natural Heritage Program, and in August of 1984 presented its recommendations for implementing the programs (Montana Natural Resources Data System Advisory Committee 1984). The Statement of Intent taken from this report is presented in Appendix G.

The Committee recommended that the projects be housed in the Montana State Library because the Library is an agency that can remain strictly neutral on controversial resource issues, and because the agency has an ongoing information dissemination function.

The Committee also recommended that The Montana Natural Heritage Program should be implemented through a contract with the Nature Conservancy, and that the Natural Resource Information System should administer that contract.

A four-year startup period was envisioned for the programs, after which time they will have reached maturity. The Committee recommended the Resource Indemnity Trust Fund as the most appropriate funding mechanism. On October 30, 1984, a proposal was submitted to the Department of Natural Resources and Conservation for funding through the Resource Indemnity Trust program.

During the 1985 Legislative Session, strong support for the programs was presented by government agencies, industry and business, and citizen's groups. The 1985 Legislature amended the earlier law, thereby placing the programs in the State Library, and provided funding through a Resource Indemnity Trust grant, Fish, Wildlife and Parks license fees, and private funds.

The State Library resumed the meeting schedule of the Advisory Committee, and in late 1985 completed negotiation of a contract with the Nature Conservancy for implementation of a Montana Natural Heritage Program. In October of 1985 the Natural Heritage Program staff was hired, and in December of 1985 the Natural Resource Information System program director was hired.

Appendix C: Membership of Montana Natural Resources Data System Advisory Committee as of December 31, 1986

AGENCY	DELEGATE
<u>STATE AGENCY DELEGATES</u>	
Montana Dept. of Agriculture	Ralph W. Peck Deputy Director
Montana Dept. of Fish, Wildlife & Parks	Dr. John Weigand, Chief Research and Tech. Bureau Wildlife Division
Montana Dept. of Health & Environmental Sciences	William J. Opitz Deputy Director
Montana Dept. of Highways	Homer G. Wheeler Assistant Administrator Engineering Division
Montana Historical Society	Dr. Robert Archibald Director
Montana Dept. of State Lands	Dennis Hemmer Commissioner
Montana State Library	Sara Parker State Librarian
Montana Dept. of Natural Resources and Conservation	Tim Gallagher Assistant Administrator Energy Division
Montana University System	Dr. Carroll Krause Commissioner of Higher Education
<u>AD-HOC FEDERAL DELEGATES</u>	
U.S. Dept. of Agriculture Forest Service	James E. Reid, Director of Management Systems
U.S. Department of the Army Omaha Nebraska District	William F. Swegle, Chief Corps of Engineers
U.S. Department of Energy	Randall Moy, Coordinator Bonneville Power Admin.

Appendix C
(continued)

AGENCY	DELEGATE
U.S. Department of Energy	Robert J. Harris Assistant Area Manager Western Area Power Admin.
U.S. Department of the Interior Geological Survey	Lee Aggers Special Assistant National Mapping Division
U.S. Department of the Interior Bureau of Indian Affairs	Don Luse Billings Area Office
U.S. Department of the Interior Bureau of Land Management	Ernest L. Kemmis Information Systems Manager Montana State Office
U.S. Department of the Interior Bureau of Reclamation	Jack Sutphin, Chief Montana Operations Office

Appendix D: Membership of the Montana Water Resources Data Management Subcommittee

AGENCY	DELEGATE
Montana College of Mineral Sciences and Technology	Tom Patton Bureau of Mines & Geology
Montana Dept. of Fish, Wildlife & Parks	Bob McFarland Fisheries Division
Montana Dept. of Health & Environmental Sciences	John Jarvie Systems Analyst
Montana Dept. of State Lands	Bonnie Lovelace, Hydrologist Reclamation Division
Montana Dept. of Natural Resources Water Resources Division	Gary Knudsen, Supervisor Water Resources Division
Montana Water Resources Research Center Montana State University	Howard Peavy Director
U.S. Department of the Interior Geological Survey	Chuck Parrett Water Resources Division

Appendix E: List of Publications and Reports

DATE	TITLE
April, 1986	Article in Montana Mining Association Journal
April, 1986	User Needs Survey Final Report
August, 1986	Report of Progress for the period July 1, 1985 - June 30, 1986 (submitted to State Lands)
August, 1986	Report of Progress for the period July 1, 1986 - June 30, 1986 (submitted to Fish, Wildlife & Parks)
September, 1986	Quarterly Report of Progress for the period July 1, 1986 - August 31, 1986 (submitted to Dept. of Natural Resources and Conservation)
November, 1986	The Montana Natural Resource Information Subject and Geographic Index: Guidelines for Entry of New Records
November, 1986	Proceedings of the Montana Water Resources Data Users Conference
December, 1986	Quarterly Report of Progress for the period September 1, 1986 - November 30, 1986 (submitted to Dept. of Natural Resources and Conservation)

Appendix F: List of Promotional and Publicity Activities

DATE	ACTIVITY
1/24/86	Appearance on KTVH (Heritage Program)
1/27/86	Appearance on KTVH (NRIS)
2/26-27/86	Booth and Presentation at Annual Meeting of the Montana Chapter of the Wildlife Society (NRIS/Heritage)
3/86	User Needs Survey
4/86	Article in Journal of the Montana Mining Association (NRIS/Heritage)
4/4/86	Presentation to Montana Academy of Sciences Annual Meeting (NRIS/Heritage)
4/16/86	Presentation to University of Montana Faculty (NRIS)
10/2/86	Co-sponsorship of Montana Water Resources Data User's Conference (NRIS)
10/15-17/86	Booth at Montana Natural Areas Conference (NRIS/Heritage)
11/6-7/86	Booth at Montana Association of Conservation Districts Annual Conference (NRIS/Heritage)
11/7/86	Feature Article in Your Time (supplement to the Independent Record) (Heritage)
11/21-22/86	Booth at Annual Meeting of Northern Plains Resource Council (NRIS/Heritage)
12/86	Article in MSU Water Center Newsletter
12/7/86	Presentation and Demonstration to Montana Bald Eagle Working Group (NRIS)
12/8/86	Booth, demonstration, and presentation at Annual Meeting of the Montana Chapter of the American Fisheries Society (NRIS/Heritage)

APPENDIX G

Statement of Intent of the Montana Natural Resources Data System Advisory Committee (taken from its July, 1984 report).

It is the intent of the legislature to commence the operation of a Natural Heritage Program as defined in 90-15-102, MCA. Responsibility for operating the program is given to the State Library. The Library may either hire staff to carry out the program or contract with an independent contractor to do the work. If it is determined that contracting for services is appropriate, the Library or any other state agency may make available resources or facilities to help minimize costs. For example, state agencies could provide office space, secretarial assistance, telephone communications, computer time, etc.

The State Library is also responsible for continuing development of a framework to implement a state Natural Resources Information System and to implement the first phase of such a system as described below.

The first phase of the Natural Resources Information System consists of implementation of the Natural Heritage Program, as described above, and the following tasks:

- (1) identify all existing natural resources data bases maintained by the state and, if feasible, by local and federal government, including various districts, and by private sources;
- (2) establish a first level indexing system and referral service to respond to information requests and publicize the existence of such a service;
- (3) identify appropriate data categories, types of data and data formats, including whether automated or manual;
- (4) define options for operating the information system, including refinements and updating; and
- (5) make recommendations to the legislature as to the feasibility of continued development of a natural resources information system, providing alternative approaches.

In carrying out these tasks, the Library should bear in mind the following criteria:

- (1) The data management should reflect the needs of public agencies and the general public.
- (2) Data should be identifiable on a geographical basis.
- (3) Data format should be compatible with existing formats and electronic data processing. The format should have a potential

for use in a statewide mapping program and should consider user needs.

- (4) Data management and data format should be developed to reduce the potential for duplication of data collection.

After initial experience with the various data bases available in Montana, the Library will be in a better position to recommend to the legislature whether or not it is feasible to continue operation of a natural resources information system and, if feasible, at what level of complexity.

It is not intended state agencies be required to centralize data collections. It is expected that various agencies will continue to collect and store data on various natural resources. The Natural Resources Information System should be a system that facilitates access to these data for interested persons.

It is intended the agencies may seek non-state sources of funding to supplement the Natural Heritage Program and the Natural Resources Information System. Acquisition of such funds will help to reduce the state costs of operation.

In responding to information requests, it is sufficient for a state agency to make the information available for use during working hours at the site where the data is normally stored.

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